CLAIMS

1. Measuring device for non-stationary radiative and convective heat flux generated in a gaseous fluid (22), notably a highly corrosive gaseous fluid under high pressure and at high temperature, such as a gas from the combustion of propellants, characterised by the fact that it has a tubular metal body (1) open at its two extremities, a low heat-loss isotropic chamber (5) mounted coaxially in the interior of the tubular metal body (1), a detector (20) of the radiative heat flux, fixed within the interior of the isotropic chamber (5), this detector being equipped to deliver an electrical signal representative of the non-stationary radiative and convective heat flux generated within the gaseous fluid (22), a metallic lens (11) designed to pump the heat of the gaseous fluid (22) and radiate it integrally and instantaneously into the isotropic chamber (5), this lens being mounted on a cap (3) designed to seal one of the extremities of the tubular metal body (1) and a plug (2) designed to seal the other extremity of the tubular metal body (1), an annular cylindrical space (6) located between the isotropic chamber (5) and the tubular metal body (1) to permit the passage of a purging gas (25) circulating in the isotropic chamber (5) and in the space (6).

2. A measuring device according to claim 1 characterised by the fact that the tubular metal body (1) is equipped with a safety vent (10) discharging into the space (6) created between the isotropic chamber and the tubular metal body and through which the space (6) is linked to the exterior to enable the discharge of the purging gas (25) in the event of over-pressure.

3. A measuring device according to claim 1 characterised by the fact that the cap (3) is mounted in a removable manner on one extremity of the tubular metal body (1).

4. A measuring device according to claim 3, characterised by the fact that the cap (3) has a threaded exterior (18a) designed to operate with the internal thread (18b) cut into one of the extremities of the tubular metal body (1).

5. A measuring device according to claim 1, characterised by the fact that the cap (3) is equipped with a transverse opening (4) in which the metallic lens (11) is mounted in a manner that one of its faces (12, 13) is in contact with the gaseous fluid (22}.

6. A measuring device according to claim 1, characterised by the fact that the detector (20) is affixed to the plug (2),

7. A measuring device according to claim 1, characterised by the fact that the lateral walls of the isotropic chamber (5) are affixed to the plug (2).

8. A measuring device according to claim 1, characterised by the fact that the plug (2) is provided with entry ways (8) and exit ways (9) for the purging gas (25).

9. A measuring device according to claim 1, characterised by the fact that the interior wall (31) of the isotropic chamber (5) is coated with a metallic deposit nap so as to ensure a maximum corpuscular reflection of the radiated heat flux emitted in the chamber (5).

10. A measuring device according to claim 1, characterised by the fact that the external wall (32) of the isotropic chamber (5) is also coated with a metallic deposit so as to reflect the parasitic radiation emitted by the tubular metal body (1) in the annular space(6).

11. A measuring device according to claim 1, characterised by the fact that the isotropic chamber (5) is in a cylindrical form and that the detector (20) is affixed according to the axis of this chamber (5).

12, A measuring device according to claim 1, characterised by the fact that the metallic lens (11) is a high thermometric conductivity body designed to pump the heat flux heat via its face (12) in contact with the gaseous fluid (22), its other face (13) being equipped to instantaneously and integrally radiate the heat flux pumped into the interior of the isotropic chamber (5).

13. A measuring device according to claim 12, characterised by the fact that the face (12) of the lens (11) in contact with the gaseous fluid (22) is coated with a metallic oxide deposit with a high absorption coefficient and resistance to corrosion, the other face (13) being coated with a high emissivity metallic deposit.

14. A measuring device according to claim 1, characterised by the fact that the metallic lens (11) is provided at its periphery with an attachment element (17) by which it is attached in a removable manner to the extremity of the metal body (1) by means of the cap (3).

15. A measuring device according to claim 12, characterised by the fact that the metallic lens (11) has a circular part (26) through which it pumps the heat flux of the gaseous fluid (22) and a conical part (27) radiating the heat flux pumped into the isotropic chamber (5), the two parts (26 and 27) being connected to one another by a small diameter liaison axis (28).

16. A measuring device according to claim 15, characterised by the fact that the circular part (26) of the metallic lens (11) is of a flat, cylindrical or curved form.

17. A measuring device according to claim 15, characterised by the fact that the conical part (27) of the metallic lens (11) includes a truncated cavity (14) designed to increase the emitting surface.

18. A measuring device according to claim 15, characterised by the fact that the conical part (27) of the metallic lens (11) is full and curved.